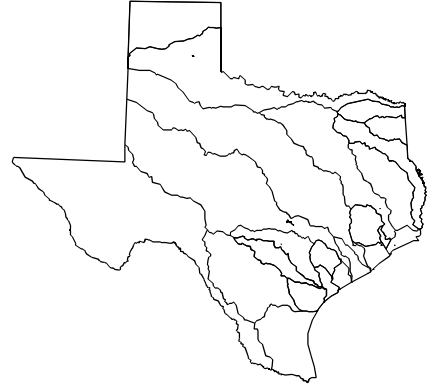


Chapter 3

Existing TNRCC Building Blocks for Watershed Management

Successful implementation of Texas' statewide watershed management approach will depend on the expertise, outputs, and resources of stakeholders. Existing surface water quality programs under the Office of Water Resource Management (OWRM) and the Field Operations Division are the foundation for core components of the watershed management approach, and the programs will adjust workloads to support implementation. A subset of OWRM and Field Operations programs will initiate the framework for implementation. Key programmatic and regulatory building blocks that are considered critical to the overall success of the approach are listed below, along with descriptions of how they relate to watershed management. This list is by no means exhaustive. Managers and staff throughout the TNRCC are encouraged to continue incorporating additional agency and external partner activities whenever and wherever it is sensible and cost-effective.



OWRM Programs Supporting Watershed Management

The primary building blocks for the watershed management approach are provided by existing OWRM program functions and capabilities. Most planning, monitoring, assessment, and implementation activities of the proposed approach are already being conducted. The watershed management approach simply provides a new framework that streamlines these activities, focuses them more intensely on achieving resource management objectives, and facilitates integrating program functions. Key functions and capabilities of existing OWRM organizational units that will form the foundation for the watershed management approach are summarized below.

Surface Water Quality Monitoring Team

- 💧 Collect statewide surface water quality data to support watershed assessment through ambient and targeted monitoring
- 💧 Coordinate and collaborate with TNRCC regional offices, the CRP, and other organizations to establish a watershed-based strategic monitoring plan in each river basin
- 💧 Manage water quality data and update the Water Quality Inventory Report [CWA §305(b)], which describes the status and trends of the state's waters
- 💧 Annually update the QAPP, which documents adherence to proven scientific practices to ensure that water quality data are scientifically credible
- 💧 Establish protocols and procedures for conducting nonpoint source data collection at the watershed level

Water Quality Modeling Team

- 💧 Review and recommend water-quality-based effluent limits based on wasteload evaluations for state wastewater permits
- 💧 Compile the CWA §303(d) list for Texas, which ranks water quality segments prioritized for remedial or protective actions
- 💧 Assess and project the effects of waste loading on instream dissolved oxygen concentrations

- 💧 Develop pilot project to establish protocols for modeling nonpoint source loadings at the watershed scale

Water Quality Standards Team

- 💧 Systematically develop and adopt surface water quality standards based on a triennial review process
- 💧 Conduct special studies and use attainability analyses to support the adoption of site-specific water quality standards
- 💧 Evaluate wastewater permits to ensure that water quality standards are achieved

Toxicity Evaluation Team

- 💧 Collaborate with the permitting, standards, and modeling teams to ensure appropriate limits and criteria for biomonitoring, toxic pollutants, flows, and mixing conditions for wastewater permits
- 💧 Locate and map all permitted wastewater discharges

Texas Watch Team

- 💧 Provide watershed-based environmental outreach and education efforts through volunteer monitoring networks
- 💧 Recruit and track volunteers to identify and monitor water quality issues and concerns

Ecosystem Research and Assessment Team

- 💧 Provide hydrological modeling and estimates of high- and low-flow conditions
- 💧 Conduct field sampling for biological integrity, including habitat analysis and biotic community analyses

Nonpoint Source Program Team

- 💧 Prepare the *Nonpoint Source Assessment Report for the State of Texas*, which identifies impacts from nonpoint sources of pollution, and the *Nonpoint Source Management Program for the State of Texas*, which identifies management strategies to address them
- 💧 Administer CWA §319 Nonpoint Source Grant Program, providing federal grant assistance for the implementation of NPS prevention and control projects
- 💧 Conduct public outreach and education activities that enhance public awareness of and involvement in nonpoint source pollution issues
- 💧 Provide technical assistance on the prevention and control of nonpoint source pollution.

Clean Rivers Program Team

- 💧 Provide oversight and coordination of the CRP, which provides the foundation for Phases 1 through 3 of the watershed management cycle
- 💧 Prepare guidance for CRP contractors participating in the watershed management approach
- 💧 Review and approve of basin monitoring plans, quality assurance project plans, and annual revisions from partners responsible for implementing basin monitoring plans

- 💧 Collaborate with basin steering committees and fee payers to ensure public input into TNRCC regulatory process
- 💧 Collaborate with OWRM surface water quality programs

Border Environmental Assessment Team

- 💧 Conduct pilot projects to establish protocols for modeling nonpoint source loadings at the watershed scale
- 💧 Conduct water quality monitoring and assessment in the Rio Grande and the Nueces–Rio Grande coastal river basins
- 💧 Provide continuous oversight of the basin steering committees of the Rio Grande and the Nueces and Rio Grande coastal river basins

Wastewater Permit Section

- 💧 Review and process wastewater permit applications for industrial and municipal point source wastewater discharges
- 💧 Coordinate with modeling, standards, and toxicity evaluation teams to ensure permits are written with appropriate effluent limitations and conditions for protecting water quality
- 💧 Participate in public hearings, meetings, and mediate as needed during the permitting process

TNRCC Regional Office Support of Watershed Management

- 💧 Conduct routine water quality sampling using recognized quality assurance procedures to determine ambient water quality
- 💧 Submit surface water quality monitoring data to central water quality database
- 💧 Conduct special studies to support water quality assessment
- 💧 Conduct compliance inspections of wastewater treatment facilities
- 💧 Initiate appropriate enforcement action to resolve noncompliance problems
- 💧 Conduct follow-up action to assess implementation of corrective measures
- 💧 Provide documentation, technical support, and quality control for formal enforcement actions

The building blocks within the OWRM and the TNRCC regional offices provide a strong foundation for Texas' watershed management approach. Many additional opportunities for program coordination and integration will arise as the watershed management approach evolves and as institutional awareness and support grows.

Permit-by-Basin Rule

The Permit-by-Basin Rule (Title 30, Texas Administrative Code, §305.71), adopted by the TNRCC on January 3, 1995, is an important element of the watershed management approach. This rule requires comprehensive evaluation of the combined effects of multiple permitted discharges on water quality within each watershed or basin. To the greatest practicable extent, the TNRCC requires that all industrial and domestic wastewater permits within a single river basin

or watershed have the same expiration date. This rule applies to all permit applications—new, amended, and renewed—received on or after the effective date of the rule. The rule allows the TNRCC to balance its permit workload annually over a five-year period, and brings greater consistency to the permitting process.

The rule reflects the hydrologic connection between major river basins and coastal basins. Permits will be issued to coincide with the implementation phase of the five-year watershed management schedule. The TNRCC may, if necessary, issue a permit for less than five years, but never for less than two years. Recognizing the need for flexibility during transition to the five-year cycle, permit schedules will be changed to reduce the burden on permittees. Permit expiration dates may be changed to accommodate the three-year compliance period, or variances, before water-quality-based limits become effective (see Table 3-1).

The Permit-by-Basin Rule, in conjunction with the watershed management cycle, establishes the statewide sequence for implementing a watershed management approach in all 23 basins and coastal waters of the state. The sequence of scoping, data collection, and assessment activities in each basin prior to permitting provides an efficient means to gain understanding of overall water quality in a watershed. Long-term environmental benefits of this rule will be even greater as water resource managers gain an understanding of the cumulative effects of discharges on watersheds.

Table 3-1. Renewal Schedule of Wastewater Discharge Permits by River Basin

River Basin	Basin Group	Basin No.	Segments	Approximate No. of State Permits				
				1996	1997	1998	1999	2000
Canadian River	A	01	0100–0105	44				
Red River	A	02	0200–0229	125				
Sulphur River	A	03	0300–0306	32				
Cypress Creek	A	04	0400–0409	48				
Sabine River	A	05	0500–0515	151				
Sabine Pass	A	24	2411	0				
Neches River	A	06	0600–0614	170				
Trinity River	A	06	0824–0841	78				
Trinity River	B	08	0800–0823		278			
San Jacinto River	B	10	1007, 1010–1014, 1017		346			
San Jacinto River	C	10	1000–1006, 1008–1009, 1015–1016			484		
San Jacinto–Brazos Coastal	C	11	1100–1113			88		
Trinity–San Jacinto Coastal	C	09	0900–0902			24		
Neches–Trinity Coastal	C	07	0700–0704			39		
Sabine Lake	C	24	2412			7		

River Basin	Basin Group	Basin No.	Segments	Approximate No. of State Permits				
				1996	1997	1998	1999	2000
East Bay, Trinity Bay	C	24	2422–2423			0		
Tabbs Bay	C	24	2426			7		
Black Duck Bay, Scott Bay, Burnett Bay	C	24	2428–2430			2		
Brazos River	D	12	1200–1255				406	
Brazos-Colorado Coastal	D	13	1300–1305				17	
Lavaca River	D	16	1600–1605				7	
Upper Galveston Bay	D	24	2421				8	
West Bay, Clear Lake	D	24	2424–2425				30	
San Jacinto Bay	D	24	2427				11	
Moses Bay, Chocolate Bay, Bastrop Bay, Christmas Bay, Drum Bay, Barbours Cut, Texas City Ship Channel, Bayport Channel, Lower Galveston Bay	D	24	2431–2439				35	
East Matagorda Bay, Cedar Lakes	D	24	2441–2442				3	
Colorado River	D	14	1417–1433				89	
Colorado River	E	14	1400–1416					131
Guadalupe River	E	18	1800–1818					69
San Antonio River	E	19	1900–1913					57
Rio Grande	E	23	2300–2314					117
Nueces River	E	21	2100–2117					27
San Antonio–Nueces Coastal	E	20	2000–2004					6
Colorado-Lavaca Coastal	E	15	1500–1502					5
Lavaca-Guadalupe Coastal	E	17	1700					4
Nueces–Rio Grande Coastal	E	22	2200–2204					35
Matagorda Bay, Tres Palacios Bay	E	24	2451–2452					5
Lavaca Bay	E	24	2453					13
Cox Bay, Keller Bay, Carancahua Bay	E	24	2454–2456					6

River Basin	Basin Group	Basin No.	Segments	Approximate No. of State Permits				
				1996	1997	1998	1999	2000
Espiritu Santo Bay, San Antonio Bay, Mesquite Bay	E	24	2461–2463					5
Aransas Bay, Copano Bay, St. Charles Bay	E	24	2471–2473					8
Corpus Christi Bay, Nueces Bay, Redfish Bay	E	24	2481–2483					21
Corpus Christi Inner Harbor, Oso Bay	E	24	2484–2485					31
Laguna Madre, Baffin Bay, South Bay, Brownsville Ship Channel	E	24	2491–2494					55
Gulf of Mexico	E	25	2500					2
Permit Totals				648	624	651	606	597

Clean Rivers Program

The Clean Rivers Program (CRP) is a statewide water quality assessment and data collection program administered by the OWRM. The program's goal is to assess the quality of water resources in each river basin in Texas through partnerships involving the TNRCC and regional and local stakeholders. Key components of this program that relate to the watershed management framework are summarized below.

Public Participation

Public participation in water resource management is an essential component of the watershed management approach. Basin steering committees are the primary forum for local participation in each river basin, and regional authorities seek input and support from these committees for water quality planning initiatives. Existing basin steering committees are excellent mechanisms to achieve the framework goal of increased public participation.

Basin Water Quality Monitoring Program and Quality Assurance Project Plans

The CRP's basin water quality monitoring program is another building block for the watershed management approach. This program addresses both basin and state monitoring objectives. It involves continuous coordination among the TNRCC's Surface Water Quality Monitoring (SWQM) Team, TNRCC regional offices, the Clean Rivers Program Team (CRPT), CRP contractors, councils of government, federal agencies, local governments, and individual permittees. Such coordination results in basin-specific strategic monitoring plans, including

- 💧 a list of monitoring objectives and performance criteria to indicate whether objectives have been met;
- 💧 a map with proposed sampling sites and existing monitoring stations for all basin monitoring efforts;

- 💧 a brief evaluation of site selection that considers (1) how a station will contribute to monitoring objectives, (2) availability of flow information, and (3) representativeness (e.g., proximity to point sources and tributaries);
- 💧 a proposed sampling regime that describes the frequency of sampling events, parameters to be measured, parties responsible for conducting sampling and analysis, and sampling and analytical methods;
- 💧 a proposed budget;
- 💧 a brief explanation of how the plan meets objectives;
- 💧 a data management plan;
- 💧 a methodology outlined to evaluate the effectiveness of the monitoring plan;
- 💧 targeted monitoring plans.

The current surface water quality monitoring approach in place through the CRP is three-tiered:

1. Fixed-station or baseline monitoring for temporal and spatial analysis
2. Systematic watershed monitoring at stations monitored on a rotational basis (e.g., once each five-year cycle) to further identify and quantify causes and sources of stress and impairment to water quality
3. Targeted monitoring to support the permitting process for individual permittees

To provide consistency and scientific validity, the CRP requires quality assurance project plans (QAPPs) to be submitted and approved by the TNRCC for each river basin. The QAPP is critical for establishing the protocols necessary for monitoring partners to plan, implement, and assess water quality data. Documenting each partner's adherence to proven quality assurance and quality control practices (see Glossary) ensures that environmental data are scientifically credible. The CRP's monitoring results may be used to

- 💧 characterize existing watershed conditions;
- 💧 evaluate spatial and temporal water quality status and trends;
- 💧 identify emerging problems;
- 💧 evaluate the effectiveness of water quality control programs;
- 💧 enhance the ability to establish appropriate water quality standards and target agency implementation activities (e.g., permits, grants, outreach, and technical help.)

Data collected by CRP participants for basin assessments will be comparable to data collected by TNRCC staff, ensuring its use for statewide analysis and comparability of all data in the TNRCC database. The CRP's basin monitoring plans and QAPPs in conjunction with the TNRCC's surface water quality monitoring program provide the basis for implementing the tasks of Phase 2 of the basin management cycle.

Water Quality Assessment

A consistent methodology for evaluating and analyzing data is critical to sound decision making. The CRP's protocols and techniques ensure the consistent analysis of conventional water quality parameters, such as dissolved oxygen, as well as nutrients and dissolved metals. The statewide methodology developed under the CRP ensures that assessments support regulatory and nonregulatory management activities. Assessments conducted according to this methodology can be used

to support development of corrective strategies involving surface water quality standards revisions, instream flow requirements, wasteload allocations, and wastewater discharge permit limits for conventional and toxic contaminants. The assessments may also support planning and informational products such as the statewide summary of water quality, nonpoint source assessments, priority lists for focusing state resources, and reports required by federal statutes. Using this consistent data assessment methodology, the OWRM will have a wealth of watershed-specific water quality data with which to target watersheds of concern and identify priority water pollution problems.

Data Management

To meet the challenge of gathering, arranging, analyzing, and disseminating large volumes of surface water quality data, the CRP has developed procedures for storing and using data, management protocols to ensure the consistent aggregation of different data sources into one database. These protocols cover all phases of creating a data management system, including planning, design, implementation, maintenance, and growth. Protocols are in place to maintain compatible data management systems, QA, analysis of data, and determined methodologies for spatial analysis using geographic information systems. Through the CRP, regional authorities have established regional water quality data clearinghouses for access by the public and permittees.

Additional Building Blocks

Questions for program managers and staff to consider when evaluating whether to incorporate more program activities within the watershed management approach include the following:

- 💧 Will a geographic focus (i.e., organizing activities by basins) improve the consistency and efficiency of the program's performance?
- 💧 Will synchronizing activities with the basin management cycle help programs balance work loads from year to year and improve long-term planning capability?
- 💧 Can activities among programs be consolidated or better coordinated to become complementary through the watershed management framework, including meeting multiple governmental mandates through a single process or outcome of the approach?
- 💧 Can individual program resources be leveraged with others through the framework to achieve goals and objectives to a greater extent than when acting alone?
- 💧 Will adding the program activity strengthen the framework and result in restoring or protecting Texas' water resources more effectively?

The remainder of this document focuses on roles and responsibilities defined for the initial subset of OWRM programs and activities outlined in Chapter 3, as well as a transition plan for implementing the approach. However, managers and staff not in these initial programs can also benefit by reviewing Chapters 4 through 6 to see examples that may stimulate ideas for other existing programs to participate in the watershed management approach.